

Five New Records of the Subfamily Campopleginae (Hymenoptera: Ichneumonidae) from South Korea

Jin-Kyung Choi, Jong-Wook Lee*

Department of Life Sciences, Yeungnam University, Gyeongsan 38541, Korea

ABSTRACT

The subfamily Campopleginae Förster is the third largest group of Ichneumonidae, comprising more than 2,130 species worldwide. At present 55 species within 13 genera have been reported from South Korea so far. Five species, *Campoplex tosensis* (Uchida, 1932), *Diadegma majale* (Gravenhorst, 1829), *Dusona myrtilla* (Desvignes, 1856), *Hyposoter didymator* (Thunberg, 1822), and *Scirtetes robustus* (Woldstedt, 1877), of the subfamily Campopleginae (Hymenoptera: Ichneumonidae) are recognized for the first time from South Korea. In addition, the genus *Scirtetes* is reported for the first time from South Korea. Diagnostic illustrations and diagnoses of the five newly recorded species are provided.

Keywords: *Campoplex*, *Diadegma*, *Dusona*, *Hyposoter*, *Scirtetes*, taxonomy

INTRODUCTION

The subfamily Campopleginae Förster, 1869 is the third largest ichneumonoids group distributed worldwide. Yu et al. (2016) listed 55 species within 13 genera in Korea and 2,130 species of 66 genera worldwide. They were usually known as endoparasitoids of the lepidopteran and coleopteran species. *Campoplex* Gravenhorst, 1829 has been reported to consist of 218 species worldwide, but to include only one South Korean species. *Diadegma* Förster, 1869 contains more than 210 species worldwide and three species from South Korea. *Dusona* Cameron, 1901 is the largest campoplegine genus, over 440 species were distributed worldwide and 27 species from South Korea (Choi and Lee, 2014; Yu et al., 2016). *Hyposoter* Förster, 1869 includes 120 valid species worldwide and only one species from South Korea. *Scirtetes* Hartig, 1838 is one of small genus group of Campopleginae Förster, 1869 with only two species being described worldwide (Yu et al., 2016). In the present paper, we report five species new to South Korean fauna: *Campoplex tosensis* (Uchida, 1932), *Diadegma majale* (Gravenhorst, 1829), *Dusona myrtilla* (Desvignes, 1856), *Hyposoter didymator* (Thunberg, 1822), and *Scirtetes robustus* (Woldstedt, 1877). Also, the genus *Scirtetes* is recorded for the first time from South Korea.

MATERIALS AND METHODS

Materials used in this study were collected by sweeping and Malaise traps, after which they were deposited in the animal systematic laboratory of Yeungnam University (YNU, Gyeongsan, Korea). The distributional data and host information are mainly from Yu et al (2016). The morphological terminology is mostly that of Gupta and Maheshwary (1977). Specimens were examined using an AxioCam MRc5 camera attached to a stereo microscope (Zeiss SteREO Discovery. V20; Carl Zeiss, Göttingen, Germany), processed using AxioVision SE64 software (Carl Zeiss), and optimized with a Delta imaging system (i-solution; IMT i-Solution Inc., Vancouver, Canada).

Abbreviations are as follows: TD, type depository; CB, Chungcheongbuk-do; GB, Gyeongsangbuk-do; GN, Gyeongsangnam-do; GG, Gyeonggi-do; GW, Gangwon-do; JB, Jeollabuk-do; HU, Hokkaido University, Faculty of Agriculture, Entomological Institute, Sapporo, Japan; IZU, Instytut Zoologiczny Uniwersytetu, Sienkiewicza, Wrocław, Poland (Gravenhorst collection.); NCM, Norwich Castle Museum, Norwich, United Kingdom; NHM, The Natural History Museum, Department of Entomology, London, England, United Kingdom; PI, Phytopathological Institute, Wageningen, The Netherlands; TMA, Termesztudományi Múzeum Allattara,

Barossa-Utea, Budapest, Hungary; UU, Uppsala Universitet, Zoologiska Institutionen, Entomologiska Avdelningen, Villavägen, Sweden (Thunberg collection.); ZI, Zoologiska Institutionen, Helgonavägen, Lund, Sweden; ZIN, Zoological Institute, Academy of Sciences, St. Petersburg, Russia.

SYSTEMATIC ACCOUNTS

Order Hymenoptera Linnaeus, 1758

Family Ichneumonidae Latreille, 1802

¹*Subfamily Campopleginae Förster, 1869

²*Genus *Campoplex* Gravenhorst, 1829

Campoplex Gravenhorst, 1829: 453. Type species: *Ichneumon difformis*.

Dioratica Förster, 1869: 153. Type species: *Porizon borealis* Zetterstedt; syn. by Townes et al., 1965.

Omorgus Förster, 1869: 154. Type species: *Limneria mutabilis* Holmgren; syn. by Viereck, 1912a.

Omorga Thomson, 1887: 1125. Type species: *Tranosema bicolor* Szepliget; syn. by Townes, 1970.

Pseuderipternoides Viereck, 1917: 268. Type species: *Mesoleptus porrectus* Cresson; syn. by Townes, 1945.

Zatranosema Viereck, 1912b: 45. Type species: *Tranosema bicolor*.

Diagnosis. General carina joining oral carina above base of mandible; mesopleural suture impressed as a sharp groove; areola and petiolar areas not separated, but the junction between them indicated by carina, wide; apical part of propodeum not reaching middle of hind coxa; fore wing with large and broad areolet; nervellus intercepted below the middle or rarely not intercepted; ovipositor extending beyond apex of metasoma.

³**Campoplex tosensis* (Uchida, 1932) (Fig. 1A–D)

Omorgus tosensis Uchida, 1932: 73–78. Type: female; TD: HU.

Material examined. South Korea: 1♀, Ulsan-si, Ulju-gun, Sangbuk-myeon, Mt. Gajisan, 3 Sep 1989, Lee JW (YNU); 1♀, GB: Cheongdo-gun, Unmun-myeon, Mt. Unmunsan, 23 May–6 Jun 2008, Lee JW (YNU); 1♀, Yeongyang-gun, Iwol-myeon, Mt. Iwolsan, 15 Jul–5 Sep 2014, Han HY (YNU).

Diagnosis. Body 7–8 mm; fore wing 4–5 mm; ovipositor 3–4 mm long.

Black. Palpi and tegula yellow. Mandible dark brown

with reddish brown apical teeth. Fore and mid legs yellowish brown except coxa black; hind femur and tarsus dark blackish brown; hind tibia brown, darkened basally and apically (Fig. 1A). Antenna with 32–36 flagellomeres. Face weakly convex; malar space shorter than mandible base (Fig. 1B). Occipital carina complete. Pronotum with epomia, with transversal striae. Mesopleuron finely granulated; speculum glabrous (Fig. 1C), in front of speculum with transversal striae. Mesoscutum finely punctate, without notaulus. Mesoscutellum and postscutellum weakly convex, granulated. Propodeum rugosely punctate, with wrinkles; costula distinct; median longitudinal carina convergent; externa area densely granulated; propodeal spiracle connected pleural carina. Fore wing with small areolet, petiole present (Fig. 1D); nervulus opposite basal vein. Hind wing with 4–5 distal hamuli; nervellus intercepted 0.25 lower, discoidella absent. Hind tarsus ratio is 40 : 17 : 11 : 7 : 7. Tarsal claw pectinate. Petiole with lateral carina and lateral pit. Ovipositor upcurved (Fig. 1A) and 1.5 times longer than hind tibia; with notch at the end of upper valve.

Host. Unknown.

Distribution. South Korea (new record), Japan.

⁴*Genus *Diadegma* Förster, 1869

Diadegma Förster, 1869: 135–221. Type species: *Campoplex crassicornis*.

Nythobia Förster, 1869: 153. Type species: *Meloboris pusio*. *Areolina* Enderlein, 1921: 41. Type species: *Areolina imbecilla*.

Nothanomaloides Viereck, 1925: 272. Type species: *Nothanomaloides stenospmus*.

Neoangitia Horstmann, 1969: 413–472. Type species: *Angitia glabricula*.

Auma Dbar, 1984: 438–445. Type: *Diadegma elegans*.

Diagnosis. Apical margin of clypeus convex; temple short to long and swollen; lower tooth of mandible not longer than upper tooth; propodeal carinae usually strong; ovipositor always longer than apical depth of metasoma, weakly to rather strongly upcurved.

⁵**Diadegma majale* (Gravenhorst, 1829) (Fig. 1E–G)

Campoplex majalis Gravenhorst, 1829: 1–1097. Lectotype: female; TD: IZU.

Material examined. South Korea: 1♀, JB: Mt. Mayisan, 11 May 1980, Kwon YJ (YNU).

Diagnosis. Body 5 mm; fore wing 4 mm; ovipositor 2 mm long.

Korean name: ¹*자루맷시벌아과, ²*스기하라자루맷시벌속, ³*긴꼬리노랑다리자루맷시벌 (신칭), ⁴*뿔나방살이자루맷시벌속, ⁵*방울뿔나방살이자루맷시벌 (신칭)

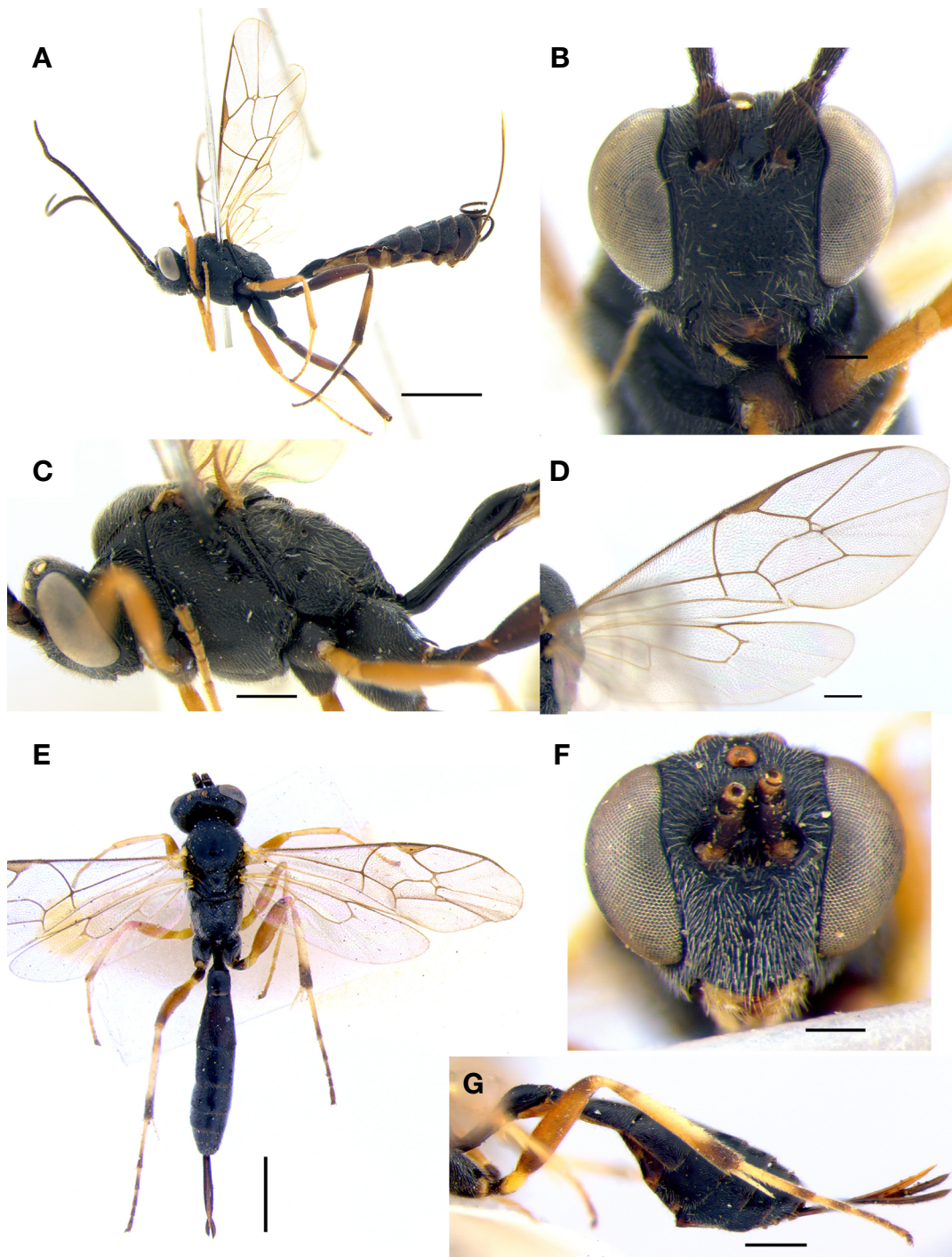


Fig. 1. *Campoplex tosensis* (Uchida). A-D: A, Habitus in lateral view; B, Head in frontal view; C, Mesosoma in lateral view; D, Wings. *Diadegma majale* (Gravenhorst). E-G: E, Habitus in dorsal view; F, Head in frontal view; G, Metasoma in lateral view. Scale bars: A=2.0 mm, B, F=0.2 mm, C, D, G=0.5 mm, E=1.0 mm.

Black. Palpi, mandible and tegula yellow. Fore and mid legs yellow to yellowish brown except mid coxa black; hind coxa and trochanter black, hind trochantellus yellow, hind

femur brown; hind tibia and tarsus yellow, darkened apically (Fig. 1E). Antenna with 27 flagellomeres. Face densely punctate and with white hairs (Fig. 1F), weakly convex; ma-

lar space shorter than mandible base. Occipital carina complete. Pronotum with epomia and with transversal striae. Mesopleuron densely and closely punctate; speculum polish, in front of speculum with transversal striae. Mesoscutum finely and closely granulated, without notaulus. Mesoscutellum and postscutellum convex, granulated. Propodeum rugosely punctate, with wrinkles; costula indistinct; median longitudinal carina indistinct; propodeal spiracle connected pleural carina. Fore wing with small areolet (Fig. 1E), petiole present, nervulus distad to basal vein. Hind wing with 4 distal hamuli; nervellus not intercepted, discoidella absent. Hind tarsus ratio is 31 : 15 : 11 : 6 : 7. Tarsal claw simple. Petiole with lateral carina and lateral pit absent. Ovipositor upcurved (Fig. 1G) and as long as hind tibia; with notch at the end of upper valve.

Host. [Diptera] Cecidomyiidae: *Cecidomyia pini*; [Hymenoptera] Cynipidae: *Adleria kollari*; [Lepidoptera] Choreutidae: *Anthophila fabriciana*; Erebiidae: *Coscinia striata*, *Spiris grammica*; Gelechiidae: *Monochroa striatella*, *Recurvaria leucateella*; Geometridae: *Chloroclystis v-ata*, *Eupithecia indigata*, *Idiotephria debilitata*; Momphidae: *Mompha epilobiella*; Noctuidae: *Hecatera bicolorata*; Nymphalidae: *Vanessa atalanta*; Plutellidae: *Plutella porrectella*, *Plutella xylostella*; Psychidae: *Ptilocephala agrostidis*; Tortricidae: *Acleris logiana*; Yponomeutidae: *Yponomeuta evonymella*, *Yponomeuta malinella*, *Yponomeuta padella* (Yu et al., 2016).

Distribution. South Korea (new record), Austria, Belgium, Bulgaria, Croatia, Czech Republic, Finland, France, Germany, Greece, Greenland, Hungary, Iran, Ireland, Italy, Latvia, the Netherlands, Norway, Poland, Russia (Irkutsk Oblast, Sankt Petersburg), Spain, Sweden, Ukraine, United Kingdom, Yugoslavia.

¹*Genus *Dusona* Cameron, 1901

Dusona Cameron, 1901: 107. Type species: *Dusona stramineipes* Cameron.

Delopia Cameron, 1903: 304. Type species: *Delopia cariniscutis* Cameron = *Dusona cariniscutis* (Cameron, 1903).

Campoplegidea Viereck, 1912a: 633. Type species: *Campoplex oxyacanthae* (Boie, 1855) = *Dusona mercator* (Fabricius, 1793).

Pseudocasinaria Viereck, 1912a: 644. Type species: *Casinaria americana* Ashmead = *Dusona americana* (Ashmead, 1890) = *Dusona annexa* (Förster, 1868).

Thymarimorpha Viereck, 1913: 384. Type species: *Thymarimorpha platygastra* Viereck = *Dusona gnara* (Cresson, 1874).

Viereckiana Strand, 1914: 163–164.

Zachrestinus Enderlein, 1921: 38. Type species: *Zachrestinus fractocristatus* Enderlein = *Dusona fractocristata* (Enderlein, 1921).

Idiosomidea Viereck, 1925: 271. Type species: *Campoplex photomorphus* (Viereck, 1905) = *Dusona bellula* (Dalla Torre, 1901).

Neodelopia Benoit, 1957: 314. Type species: *Neodelopia pauliani* Benoit = *Dusona pauliani* (Benoit, 1957).

Kartika Gupta & Gupta, 1976: 460. Type species: *Kartika aspera* Gupta & Gupta = *Dusona aspera* (Gupta & Gupta, 1976).

Diagnosis. Inner margin of eye with emargination opposite antenna socket; clypeus weakly convex, truncate or blunt; areola and petiolar areas of propodeum not separated by carina; fore wing with large or small, usually rhombic areolet, pointed or stalked; discoidella reaching nervellus or detached; glymma of petiole present, vestigial or absent; epipleurum of tergum 3 not separated by crease or sometimes partly separated; metasomal segments usually reddish brown and partly black or sometimes mostly black.

²**Dusona myrtilla* (Desvignes, 1856) (Fig. 2A–D)

Campoplex myrtillus Desvignes, 1856: 1–120. Type: male; TD: NHM.

Campoplex tenthredinum Tschek, 1871: 37–68.

Campoplex nobilitatus Holmgren, 1872: 1–89. Lectotype: female; TD: ZI.

Material examined. South Korea: 1♀2♂♂, CB: Chungju-si, Woraksan National Park, Jireupjae, 21 May 2013, Choi JK, Jeong JC (YNU); 1♀, GB: Cheongdo-gun, Unmun-myeon, Keungolgyegok (U4), M.T., 35°38'24"N, 128°58'15"E, 12 May–8 Jun 2013, Lee JW (YNU); 1♂, GN: Yangsan-si, Naewonsa Wonheosan, 19 May 2002, Lee JW (YNU); 2♀♀, GW: Wonju-si, Socho-myeon, Hakgong-ri, Mt. Chiaksan National Park (M.T.), 37°22'18"N, 128°03'1.84"E, 30 May–8 Jun 2013, Lee JW (YNU).

Diagnosis. Body 11–12 mm; fore wing 9–10 mm; ovipositor 1 mm long.

Black. Palpi, mandible and tegula yellow. Fore leg yellowish brown except coxa black, fore trochanter to femur with black spot ventrally (in female); mid leg yellowish brown except coxa and trochanter black, mid femur reddish brown and darkened basal half (in female); hind coxa to femur black, hind tibia to tarsus yellow, hind tibia with dark brown band apically (Fig. 2A). Ovipositor reddish brown; ovipositor sheath black, reddish brown apically. Clasper of male black. Antenna with 46–50 flagellomeres. Face densely punctuate; malar space short, 0.5 times as long as man-

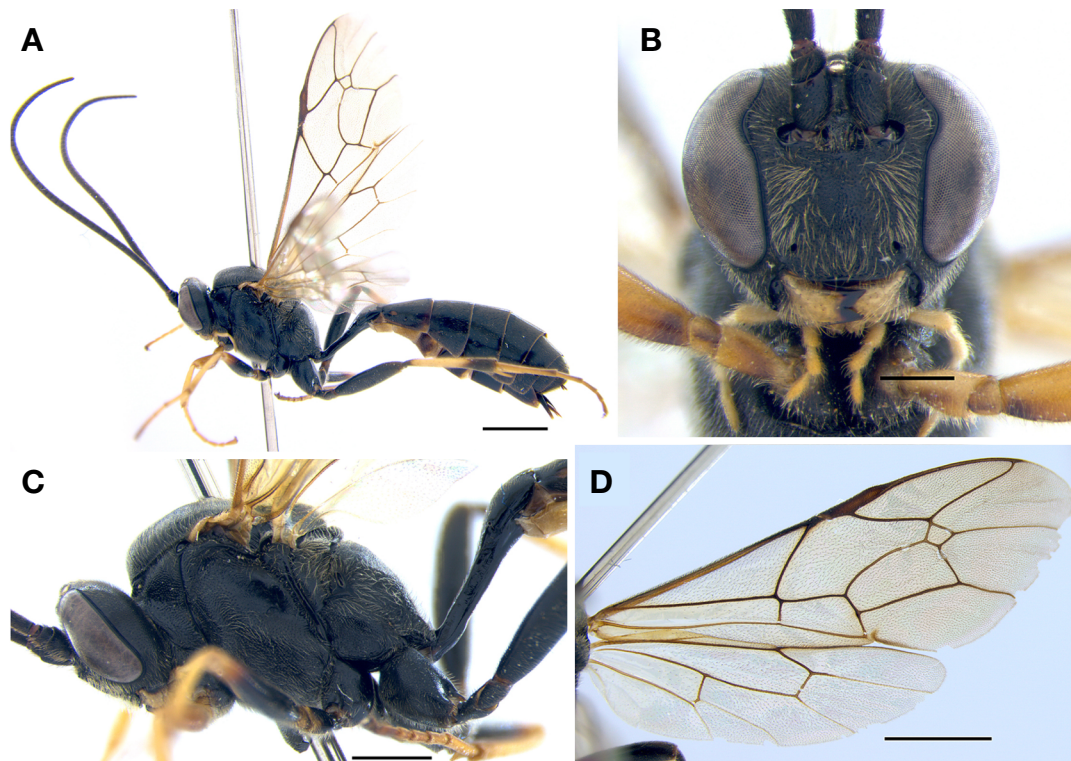


Fig. 2. *Dusona myrtilla* (Desvignes). A, Habitus in lateral view; B, Head in frontal view; C, Mesosoma in lateral view; D, Wings. Scale bars: A, D=2.0 mm, B=0.5 mm, C=1.0 mm.

dible base (Fig. 2B). Occipital carina complete. Pronotum with epomia, with transversal striae. Mesopleuron densely and closely punctate; speculum concave and polished (Fig. 2C), in front of speculum with transversal striae. Mesoscutum finely and closely punctate, notaulus very weak or investigial. Mesoscutellum and postscutellum convex. Propodeum rugosely punctate, with wrinkles; costula indistinct; propodeal spiracle elongated, connected pleural carina. Fore wing with large areolet (Fig. 2D), short petiole present, nervulus distad to basal vein. Hind wing with 7–8 distal hamuli; nervellus intercepted 0.25 lower, discoidella present. Hind tarsus ratio is 35 : 16 : 11 : 7 : 9. Tarsal claw pectinate. Petiole without lateral carina and lateral pit present. Epipleurum separated from the tergum 3, the crease with black line. Ovipositor straight and shorter than hind tibia; with notch before in the middle of upper valve.

Host. [Lepidoptera] Noctuidae: *Anarta myrtilli* (Desvignes, 1856), *Enargia paleacea* (Horstmann, 2011), *Oligia strigilis* (Strobl, 1904), *Orthosia populeti* (Hammond and Smith, 1957), *Xanthia citrigo* (Horstmann, 2011); Tortricidae: *Rhyacionia resinella* (Starke, 1956).

Distribution. South Korea (new record), Austria, Belgium,

Bulgaria, Czech Republic, Finland, France, Germany, Italy, Japan, Latvia, Moldova, the Netherlands, Poland, Romania, Russia (Irkutsk Oblast, Primor'ye Kray), Sweden, United Kingdom.

¹*Genus *Hyposoter* Förster, 1869

Hyposoter Förster, 1869: 152. Type species: *Limnerium parorgyiae* Viereck.

Ameloctonus Förster, 1869: 157. Type species: *Banchus fugitives* Say; syn. by Gahan, 1914.

Ischnoscopus Förster, 1869: 156. Type species: *Ischnoscopus synchlora* Ashmead; syn. by Gahan, 1914.

Rhythmonotus Förster, 1869: 151. Type species: *Rhythmonotus singularis* Schmiedeknecht; syn. by Townes, 1970.

Ebiicha Seyrig, 1935: 88. Type species: *Ebiicha croccata* Seyrig; syn. by Townes & Townes, 1973.

Neoarthula Rao, 1953: 179. Type species: *Neoarthula pierisae* Rao = *Hyposoter ebeninus* (Gravenhorst) syn. by Horstmann, 1987.

Diagnosis. Clypeus small and strongly convex, margin of

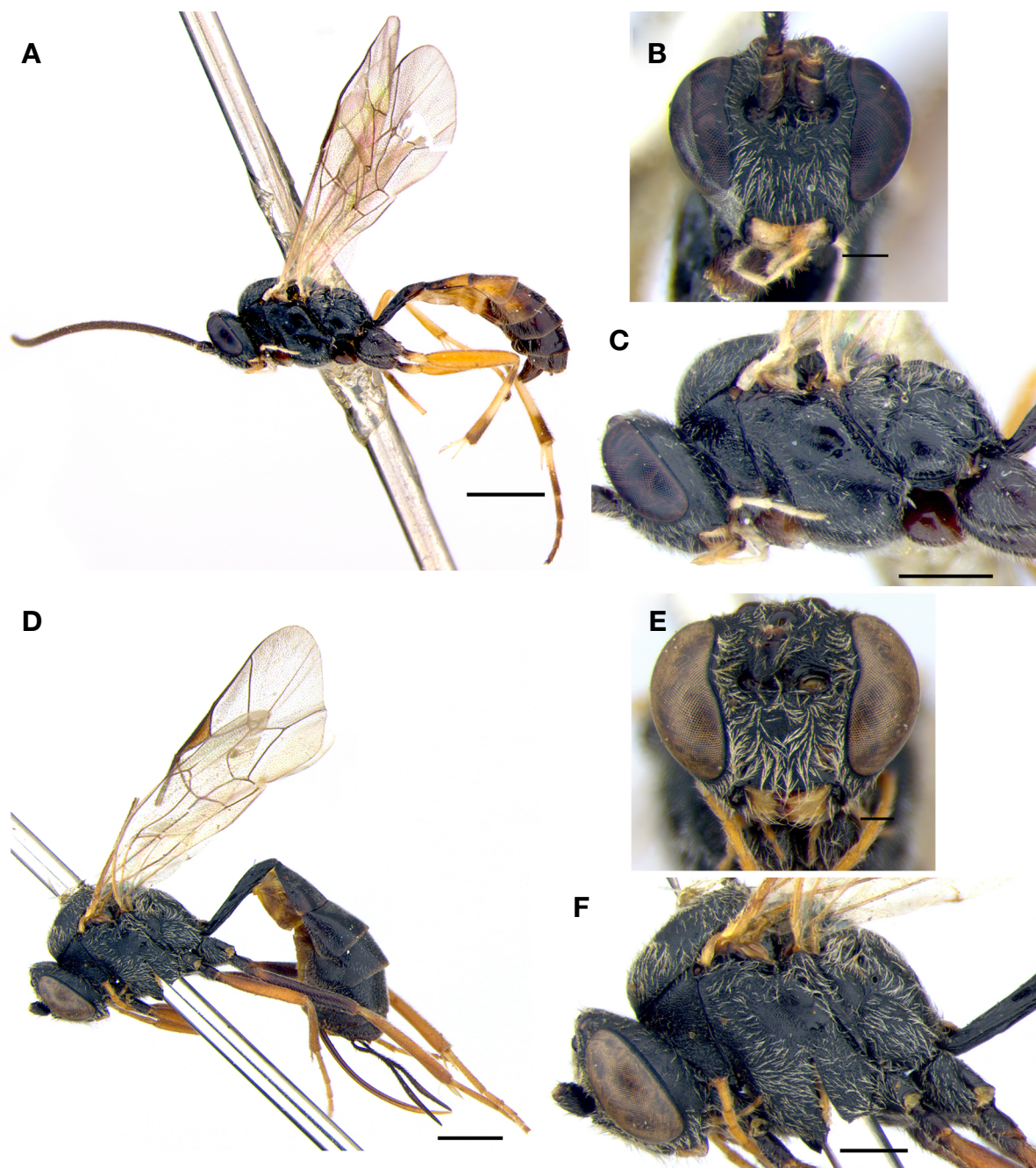


Fig. 3. *Hyposoter didymator* (Thunberg). A-C: A, Habitus in lateral view; B, Head in frontal view; C, Mesosoma in lateral view. *Scirtetes robustus* (Woldstedt). D-F: D, Habitus in dorsal view; E, Head in frontal view; F, Metasoma in lateral view. Scale bars: A, D=1.0 mm, B, E=0.2 mm, C, F=0.5 mm.

clypeus simple or narrowly and weakly reflexed; lower tooth of mandible a little smaller than upper; mesopleuron matt with punctures; areola short, areola and petiolar areas confluent or partially separated by irregular carinae; fore

wing with areolet, pointed or with stalk; ovipositor no longer than apical depth of metasoma.

¹**Hyposoter didymator* (Thunberg, 1822) (Fig. 3A-C)

Korean name: ¹*노란배송충잡이자루맴시벌 (신칭)

Ichneumon didymator Thunberg, 1822: 249–281. Type: female; TD: UU.

Ichneumon rotundator Thunberg, 1822: 249–281. Type: female; TD: UU.

Campoplex ruficinctus Gravenhorst, 1829: 1–1097. Lectotype: female; TD: IZU.

Trophocampa mesozostus nigrata Kiss, 1926: 237–286. Type: female; TD: TMA.

Anilastus schmiedeknecht Smits van Burgst, 1913: 1–37. Type: female; TD: PI.

Material examined. South Korea: 1♀, GB: Gyeongsan-si, Yeungnam Univ., 11 Aug 1987, Ryu SM (YNU); 1♂, Ulleung-gun, Ulleungdo, 24 Sep 1981, Lee JW (YNU); 1♂, Mt. Hakgasan, 10. Jul 1998, Ryu SM (YNU).

Diagnosis. Body 4.5–5.5 mm; fore wing 3.5–4.5 mm; ovipositor 0.8 mm long.

Black. Palpi, mandible and tegula yellow. Fore and mid legs yellow except coxa reddish brown; hind coxa and trochanter dark reddish brown to black; hind femur yellowish brown; hind tibia and tarsus yellow, darkened apically. Metasoma reddish brown except tergites 2–3 yellowish brown (Fig. 3A). Ovipositor reddish brown; ovipositor sheath blackish brown. Clasper of male brown. Antenna with 32–33 flagellomeres. Face densely punctate; malar space as long as mandible base (Fig. 3B). Occipital carina complete. Pronotum coarsely punctate, with epomia. Mesopleuron densely and closely punctate; speculum weakly convex, in front of speculum granulated; mesopleural pit distinct (Fig. 3C). Mesoscutum finely and closely punctate, notaulus absent. Mesoscutellum and postscutellum convex. Propodeum rugosely punctate, with wrinkles; costula indistinct, median longitudinal carina distinct; propodeal spiracle small, connected pleural carina. Fore wing with small areolet, short petiole present, nervulus distad to basal vein. Hind wing with 4–5 distal hamuli; nervellus not intercepted, discoidella absent. Hind tarsus ratio is 20 : 8 : 6 : 4 : 5. Tarsal claw simple. Petiole with lateral carina and lateral pit present. Ovipositor straight and shorter than hind tibia; with notch at the end of upper valve.

Host. [Coleoptera] Curculionidae: *Hypera variabilis*; [Lepidoptera] Gelechiidae: *Aproaerema anthyllidella*, *Scrobipalpula absoluta*; Geometridae: *Epione vespertaria*, *Hylaea fasciaria*; Lasiocampidae: *Lasiocampa grandis*, *Lasiocampa terreni*, *Lasiocampa trifolii*, *Macrothylacia rubi*; Lymantriidae: *Lymantria monacha*, *Orgyia antiqua*; Noctuidae: *Acronicta aceris*, *Acronicta rumicis*, *Agrochola haematidea*, *Agrochola litura*, *Aletia farrago*, *Aletia umbriger*, *Ammoconia caecimacula*, *Amphipyra tragopoginis*, *Anarta myrtil-*

li, *Apamea crenata*, *Aporophyla nigra*, *Autographa gamma*, *Cerapteryx graminis*, *Chrysodeixis chalcites*, *Cucullia campanulae*, *Cucullia gnaphalii*, *Cucullia tanacetii*, *Euclidia glyphica*, *Hadena albimacula*, *Hadena irregularis*, *Hadena rivularis*, *Hecatera bicolorata*, *Helicoverpa armigera*, *Helicoverpa zea*, *Heliophobus texturatus silbernageli*, *Heliothis peltigera*, *Heliothis virescens*, *Leucania loreyi*, *Lithophane furcifera*, *Lycophotia porphyrea*, *Noctua orbona*, *Noctua pronuba*, *Noctua serena*, *Orthosia gothica*, *Orthosia gracilis*, *Paradiarsia glauca*, *Polila hepatica*, *Shargacucullia blattariae*, *Shargacucullia verbascae*, *Simyra dentinosa*, *Spodoptera exigua*, *Spodoptera littoralis*, *Spodoptera litura*, *Stilbia anomala*, *Thalophila matura*, *Tholera decimalis*, *Trachea atriplicis*, *Xestia agathina*, *Xestia castanea*, *Xestia xanthographa*; Nolidae: *Earias clorana*; Notodontidae: *Cerura vinula*; Nymphalidae: *Polygonia egea*, *Vanessa cardui*; Papilionidae: *Papilio alexanor*; Pieridae: *Anthocharis cardamines*, *Colias croceus*; Pterophoridae: *Pterophorus teucii*, *Stenoptilia bipunctidactyla*, *Stenoptilia plagiodactyla*; Sphingidae: *Choerocampa alecto*; Yponomeutidae: *Yponomeuta evonymella* (Yu et al., 2016).

Distribution. South Korea (new record), Algeria, Australia, Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Latvia, Moldova, the Netherlands, Norway, Poland, Romania, Russia (Adygeyskaya, Dagestanskaya Respublika, Irkutsk Oblast, Sankt Petersburg), Slovakia, Spain, Sweden, Switzerland, Tajikistan, Tunisia, Turkey, Ukraine, United Kingdom, Uzbekistan, Yugoslavia.

¹*Genus *Scirtetes* Hartig, 1838

Scirtetes Hartig, 1838: 246–274. Type species: *Limneria robusta*.

Spudastica Förster, 1869: 135–221. Type species: *Spudastica petiolaris*.

Diagnosis. Clypeus not separated from face; upper tooth of mandible longer than lower; propodeum without carina; fore wing with areolet, without stalk; ovipositor upcurved and long.

²**Scirtetes robustus* (Woldstedt, 1877) (Fig. 3D–F)

Limneria robusta Woldstedt, 1877: 687–705. Lectotype: female; TD: ZIN.

Limneria kriechebaumeri Bridgman, 1882: 141–164. Lectotype: female; TD: NCM.

Spudastica petiolaris Thomson, 1887: 1043–1182. Lectotype: female; TD: ZI.

Korean name: ¹*튼튼밤나방자루맵시벌속 (신칭), ²*튼튼밤나방자루맵시벌 (신칭)

Material examined. South Korea: 1♀, GG: Bokwangsa, 1 May 1984, Lee JW (YNU); England: 1♀, Bucks, Pitstone Common sp 971133, Ashridge NT estate, Woodland M.T., 22 Apr–7 May 2011, Broad G (NHM); 6♂♂1♀, Brickett Wood, HT, 8 May 1939, Benson RB (NHM); 1♀, SD., Newton Abbot, 1 Jun 1941, Perkins JF (NHM); Scotland: 1♂, NS., Loch Assynt, 23 May 1958, Benson JE & RB (NHM).

Diagnosis. Body 7 mm; fore wing 5.5 mm; ovipositor 2 mm long.

Black. Mandible, palpi, and tegula yellow. All trochanter and coxa black, trochantellus to tarsus reddish brown except hind femur dark blackish brown in Korean specimen (Fig. 3D) (Trochantellus to tarsus reddish brown in European specimens).

Face granulated; clypeus not separated from face; upper tooth of mandible longer than lower. Malar space 0.5 times as long as mandible base (Fig. 3E). Frons granulated without longitudinal ridge; temple granulated. Occipital carina complete; occiput glabrous. Antenna with 26 flagellomeres (28 flagellomeres in European specimens). Pronotum granulated. Meoscutum granulated without notauli. Epicnemial carina complete; mesopleuron flat with weak mesopleural pit; speculum flat and polished, with numerous striae; lower part of mesopleuron granulated (Fig. 3F). Propodeum without carina, densely rugosely punctate. Fore wing with large pterostigma and areolet without stalk (Fig. 3D). Hind wing with 5 distal hamuli. Nervellus intercepted lower 0.2; discoidella absent. Hind tarsus ratio is 35 : 18 : 10 : 7 : missing. Petiole with strong glymma. Ovipositor upcurved and longer than hind tibia, with notch at the end of upper valve. Ovipositor sheath curved.

Host. [Lepidoptera] Noctuidae: *Agrochola macilenta* (Shaw et al., 2016); *Amphipyra pyramidea* (Shaw et al., 2016); *Cosmia trapezina* (Sedivy, 2001; Velcheva et al., 2010); *Dichonia convergens* (Sedivy, 2001); *Dryobotodes eremite* (Haeselbarth, 1985); *Orthosia cruda* (Hammond and Smith, 1960; Sedivy, 2001); *Orthosia gracilis* (Blair, 1935); *Orthosia incerta* (Blair, 1935; Bridgman, 1882); *Orthosia stabilis* (Blair, 1935; Short, 1976; Sedivy, 2001).

Distribution. South Korea (new record), Austria, Belgium, Bulgaria, Finland, France, Germany, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Russia (Khabarovsk Kray, Primor'ye Kray), Slovakia, Spain, Switzerland, United Kingdom.

ACKNOWLEDGMENTS

We are grateful to Dr. Gavin Broad of the Natural History Museum for providing specimens from NHM. We also thank the anonymous reviewer for editing this manuscript.

This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR201701203).

REFERENCES

- Ashmead WH, 1890. On the Hymenoptera of Colorado: descriptions of new species, notes and a list of the species found in the State. Bulletin of the Colorado Biological Association, 1:1-47.
- Benoit PLG, 1957. Les Ichneumonidae des Iles Mascareignes. Mémoires de l'Institut Scientifique de Madagascar, 8:307-316.
- Blair KG, 1935. Hymenopterous parasites of the genus *Taeniocampa*. Proceedings and Transactions of the South London Entomological and Natural History, 35:88-89.
- Boie F, 1855. Beobachtungen und Bemerkungen. Entomologische Zeitung Stettin, 16:97-108.
- Bridgman JB, 1882. Further additions to Mr. Marshall's catalogue of British Ichneumonidae. Transactions of the Entomological Society of London, 1882:141-164.
- Cameron P, 1901. On a collection of Hymenoptera made in the neighbourhood of Wellington by Mr. G.V. Hudson, with descriptions of new genera and species. Transactions of the New Zealand Institute, 33:104-120.
- Cameron P, 1903. Descriptions of new genera and species of Hymenoptera from India. Zeitschrift für Systematische Hymenopterologie und Dipterologie, 3:298-304, 337-344.
- Choi JK, Lee JW, 2014. Addition to the study of the genus *Dusona* (Hymenoptera, Ichneumonidae, Campopleginae) in Korea with description of a new species and key to the Korean species. Zookeys, 424:59-89. <https://doi.org/10.3897/zookeys.424.7546>
- Cresson ET, 1874. Descriptions of Mexican Ichneumonidae. Proceedings of the Academy of Natural Sciences of Philadelphia, 1873:374-413.
- Dalla Torre CG de, 1901. Catalogus Hymenopterorum. Volumen III. Trigonalidae, Megalyridae, Stephanidae, Ichneumonidae, Agriotypidae, Evanidae, Pelecinidae. Guilelmi Engelmann. Lipsiae, 1901:1-544.
- Dbar RS, 1984. A new genus and new species of Ichneumonids of the tribe Limnerini (Hymenoptera, Ichneumonidae) from the USSR and the Mongolian People's Republic. Nasekomye Mongolii, 9:438-445.
- Desvignes T, 1856. Catalogue of British Ichneumonidae in the collection of the British Museum. London, pp. 1-120.
- Enderlein G, 1921. Beiträge zur Kenntnis aussereuropäischer Ichneumoniden V. Über die Familie Ophionidae. Stettiner Entomologische Zeitung, 82:3-45.
- Fabricius JC, 1793. Entomologia systematica emendata et aucta. Tom. II. Hafniae, pp. 1-519.
- Förster A, 1868. Monographie der Gattung *Campoplex*, Grv.

- Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien, 18:761-876.
- Förster A, 1869. Synopsis der Familien und Gattungen der Ichneumoniden. Verhandlungen des Naturhistorischen Vereins der Preussischen Rheinlande und Westfalens, 25:135-221.
- Gahan AB, 1914. Descriptions of new genera and species, with notes on parasitic Hymenoptera. Proceedings of the United States National Museum, 48:155-168.
- Gravenhorst JLC, 1829. Ichneumonologia Europaea. Pars III. Vratislaviae, pp. 1-1097.
- Gupta VK, Gupta ML, 1976. A new Porizontine genus *Kartika* from India and Burma (Hymenoptera: Ichneumonidae). Oriental Insects, 10:459-496. <https://doi.org/10.1080/00305316.1976.10434519>
- Gupta VK, Maheshwary SH, 1977. Ichneumonologia Orientalis, Part IV. The tribe Porizontini (= Campoplegini) (Hymenoptera: Ichneumonidae). Oriental Insects Monograph, 5:1-267.
- Haeselbarth E, 1985. Determination list of entomophagous insects. 10. International Union of Biological Sciences, International Organization for Biological Control of Noxious Animals and Plants. West Palaearctic Regional Section Bulletin, pp. 1-61.
- Hammond HE, Smith KGV, 1957. On some parasitic Diptera and Hymenoptera bred from Lepidopterous hosts; Part III. Records of Tachinidae (Dip.), Braconidae, Ichneumonidae, Pteromalidae, Eulophidae and Scelionidae (Hym.). Entomologist's Gazette, 8:181-189.
- Hammond HE, Smith KGV, 1960. On some parasitic Diptera and Hymenoptera bred from Lepidopterous hosts; Part IV. Miscellaneous records of Braconidae, Ichneumonidae and Eulophidae (Hym.). Entomologist's Gazette, 11:50-54.
- Hartig T, 1838. Ueber den Raupenfrass im Königl. Charlottenburger Forste unfern Berlin, während des Sommers 1837. Jahresber. Fortschr. Forstwiss. Forstl. Naturk. Berlin, 1:246-274.
- Holmgren AE, 1872. De skandinaviska arterna af Ophionidsläget *Campoplex*. Bihang till K. Svenska Vet. Handlingar, 1:1-89.
- Horstmann K, 1969. Typenrevision der europäischen Arten der Gattung *Diadegma* Förster (syn. *Angitia* Holmgren) (Hymenoptera: Ichneumonidae). Beiträge zur Entomologie, 19:413-472. <https://doi.org/10.21248/contrib.entomol.19.3-6.413-472>
- Horstmann K, 1987. Bemerkungen zur Systematik einiger Gattungen der Campopleginae III (Hymenoptera, Ichneumonidae). Mitteilungen Münchener Entomologischen Gesellschaft, 76:143-164.
- Horstmann K, 2011. Verbreitung und Wirte der *Dusona*-Arten in der Westpaläarktis (Hymenoptera, Ichneumonidae, Campopleginae). [Distribution and hosts of *Dusona* species in the West Palaearctic (Hymenoptera, Ichneumonidae, Campopleginae).] Linzer Biologische Beiträge, 43:1295-1330.
- Kiss von ZA, 1926. Ichneumoniden aus der Sammlung des Ungarischen National-Museums. Annales Musei Nationalis Hungarici, 24:237-286.
- Latreille PA, 1802. Histoire naturelle, générale et particulière, des Crustacés et des Insectes. Tome Troisième. F. Dufart, Paris, pp. 318-327.
- Linnaeus C von, 1758. Systema naturae per regna tria naturae, secundum classes, ordines, genera, species cum characteribus, differentiis, synonymis locis. Tomus I. Editio decima, reformata. Laurnetii Salvii, Holmiae, pp. 1-824.
- Rao SN, 1953. On a collection of Indian Ichneumonidae (Hymenoptera) in the Forest Research Institute, Dehra Dun. Indian Forest Records, 8:159-225.
- Sedivy J, 2001. Contribution to the taxonomy and knowledge of hosts of ichneumonids (Hymenoptera: Ichneumonidae). Klapalekiana, 37:59-69.
- Seyrig A, 1935. Mission scientifique de l'Omo. Tome III. Fascicule 18. Hymenoptera, II. Ichneumonidae: Cryptinae, Pimplinae, Tryphoninae et Ophioninae. Mémoires du Muséum National d'Histoire Naturelle, Paris, 4:1-100.
- Shaw MR, Horstmann K, Whiffin AL, 2016. Two hundred and twenty-five species of reared western Palaearctic Campopleginae (Hymenoptera: Ichneumonidae) in the National Museums of Scotland, with descriptions of new species of *Campoplex* and *Diadegma*, and records of fifty-five species new to Britain. Entomologist's Gazette, 67:177-222.
- Short JRT, 1976. A description and classification of some final instar larvae of Mesochorinae (Hymenoptera, Ichneumonidae). Systematic Entomology, 1:195-200. <https://doi.org/10.1111/j.1365-3113.1976.tb00040.x>
- Smits van Burgst CAL, 1913. Tunesian Hymenoptera. Den Haag, pp. 1-37.
- Starke H, 1956. Ichneumonidenfauna der sächsischen Oberlausitz. Natura Lusatica (Bautzen), 3:17-92.
- Strand E, 1914. Neue Namen verschiedener Tiere. Archiv für Naturgeschichte, 80:163-164.
- Strobl G, 1904. Ichneumoniden Steiermarks (und der Nachbarländer). V. Fam. Ophionidae. Mitteilungen Naturwissenschaftlichen Vereines für Steiermark, Graz, 40:43-160.
- Thomson CG, 1887. XXXV. Försök till uppställning och beskrifning af aterna inom släktet *Campoplex* (Grav.). Opuscula Entomologica. Lund, 11:1043-1182.
- Thunberg CP, 1822. Ichneumonidea, Insecta Hymenoptera illustrata. Mémoires de l'Académie Imperiale des Sciences de Saint Petersburg, 8:249-281.
- Townes HK, 1945. A catalogue and reclassification of the Nearctic Ichneumonidae (Hymenoptera). Part II. The subfamilies Mesoleiinae, Plectiscinae, Orthocentrinae, Diplazoninae, Metopiinae, Ophioninae, Mesochorinae. Memoirs of the American Entomological Society, 11:478-925.
- Townes HK, 1970. The genera of Ichneumonidae, Part 3. Memoirs of the American Entomological Institute, 13:1-307.
- Townes HK, Momoi S, Townes M, 1965. A catalogue and reclassification of the eastern Palearctic Ichneumonidae. Memoirs of the American Entomological Institute, 5:1-661.
- Townes HK, Townes M, 1973. A catalogue and reclassification of the Ethiopian Ichneumonidae. Errata for 1944-1945 Ne-

- arctic catalogue, 1965 eastern Palearctic catalogue and 1966 Neotropic catalogue. *Memoirs of the American Entomological Institute*, 19:1-416.
- Tschek C, 1871. *Ichneumonologische Fragmente*. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien, 21:37-68.
- Uchida T, 1932. Neue und wenig bekannte japanische Ophioninen-Arten. *Transactions of the Sapporo Natural History Society*, 12:73-78.
- Velcheva N, Atanassov A, Peeva P, Balevski N, Karadjova O, Kolarov Y, Pelov V, Hubenov Z, 2010. Parasitoid assemblage of external-feeding Lepidoptera in abandoned plum orchard in west Bulgaria. *Journal of Balkan Ecology*, 13: 405-416.
- Viereck HL, 1905. Notes and descriptions of Hymenoptera from the western United States, in the collection of the University of Kansas. *Transactions of the Kansas Academy of Science*, 19:264-326. <https://doi.org/10.2307/3624215>
- Viereck HL, 1912a. Contributions to our knowledge of bees and Ichneumon-flies, including descriptions of twenty-one new genera and fifty-seven new species of Ichneumon-flies. *Proceedings of the United States National Museum*, 42: 613-648.
- Viereck HL, 1912b. Ophioninae: a review. *Entomological News*, 23:43-46.
- Viereck HL, 1913. Descriptions of twenty-three new genera and thirty-one new species of Ichneumon-flies. *Proceedings of the United States National Museum*, 46:359-386.
- Viereck HL, 1917. Guide to the insects of Connecticut. Part III. The Hymenoptera, or wasp-like insects of Connecticut. *Ichneumonoidea*. State of Connecticut. State Geological and Natural History Survey. Bulletin. Hartford, pp. 1-824.
- Viereck HL, 1925. A preliminary revision of some Charopsinae, a sub-family of Ichneumonoidea or Ichneumon flies. *Proceedings and Transactions of the Royal Society of Canada*, 19:259-273.
- Woldstedt FW, 1877. Über eine Sammlung schlesischer Ichneumoniden. *Melanges Biologiques tires du Bulletin de l'Académie Imperiale des Sciences de Saint Petersburg*, 9:687-705.
- Yu DSK, van Achterberg C, Horstmann K, 2016. Taxapad 2016, *Ichneumonoidea* 2015 [Internet]. Database on flash-drive, Nepean, Ontario, Accessed 1 Dec 2017, <<http://www.taxapad.com>>.

Received December 25, 2017
 Revised January 15, 2018
 Accepted January 16, 2018